

Bureau of Land Management
POLICY FOR ADMINISTERING PUBLIC LAND GRAZING
IN
MONTANA, NORTH DAKOTA, AND SOUTH DAKOTA
DURING PERIODS OF DROUGHT

Introduction

Livestock grazing is but one of the activities that BLM manages on the public lands. Drought stresses many resources and resource uses including recreation, soils, timber, vegetation, watersheds, and wildlife as well as livestock forage. However, only livestock and human activities can be readily controlled or restricted from access to public lands. The other resources are either immobile or not readily controlled. This policy deals with livestock use and implements provisions of current laws and regulations. Other uses that may require special consideration during severe drought may be addressed in separate policy statements or actions.

Vegetation cover is one part of productive rangelands because it strongly affects soil moisture. When drought reduces the total forage produced and the normal residual vegetation (standing and down plant material) is used by livestock, insects, and other grazing animals, soil moisture and temperature are affected. Soil temperatures are lowered by the residual cover during warm periods and are raised by the residual cover during cold periods. Moisture intake and penetration into soils is keyed to the amount and type of residual cover found on a soil/ecological site. In fact, with little or no residual cover on rangelands, moisture events will likely produce little effective penetration into the soil. Residual cover provides protection for soils, vegetation, wildlife, watersheds, and for the many other resources dependent upon good vegetation and livestock management.

Authority

This document implements provisions of:

- Taylor Grazing Act of June 28, 1934, as amended;
- Federal Land Policy and Management Act of 1976, as amended;
- Public Rangelands Improvement Act of 1978;
- Regulations in 43 code of Federal Regulations, Group 4100(43 CFR 4100).

Policy

This policy is meant to supplement the national drought policy as set forth by Washington Office Instruction Memorandum [2013-094](#).

It is the policy and objective of the BLM to: manage the public lands and authorize livestock grazing under the principles of multiple use and sustained yield; provide for the orderly administration of grazing by domestic livestock on the public lands; and provide for productive and healthy soil and vegetation resources as well as other environmental values.

Accomplishment of these objectives becomes more difficult during periods of range depletion caused by drought. Normal grazing schedules and livestock management practices may have to be modified. Additional coordination, consultation, and data exchange between livestock operators and Bureau personnel will be required, over and above the level normally practiced. Appropriate local, state and Federal agencies and the interested public will have to be involved at times and consistently kept informed.

The principal thrust of the policy and procedures in this document, and other regulatory and procedural requirements not repeated here, will be for the livestock operator and BLM to jointly develop strategies for livestock use on public land during and following drought. Strategies selected should be those that best protect rangeland resources while minimizing impacts on the operator to the extent possible. To that end, every degree of flexibility provided by the laws and implementing regulations will be available to authorized officers of the Bureau.

Voluntary adjustments in livestock use of public lands should be sought at the earliest date it becomes apparent that "normal" grazing schedules cannot be followed, or, if followed, would result in long-term resource degradation. The earlier an agreement can be reached or a decision made that "normal" grazing schedules cannot be followed, the more opportunities livestock operators will have to consider alternatives to minimize impacts on his or her operation. Waiting until the last minute before scheduled turnout to make a determination or decision will reduce the options available to both the operator and the Bureau.

An interdisciplinary approach (within the confines of scarce skills availability) to identify natural resources and other applicable public values vulnerable to drought will be used to prioritize allotments for attention. Second, efforts to manage public rangeland under drought conditions will be directed next to allotments with resource concerns—typically "I" category allotments. Specific allotments in the "M" and "C" categories can also be considered high priority when resource values or conditions so require. Regardless of the category assigned to an allotment, operators should be aware of the procedures and flexibilities available for dealing with drought conditions.

BLM fully expects that the vast majority of livestock operators will recognize the need and voluntarily make adjustments in livestock use of public lands the longer a drought persists. These adjustments will be recognized during the application process and grazing bills will be adjusted accordingly. Adjustments in grazing use may include but are not limited to reducing livestock numbers, shortening the season of use, altering pasture move dates, changing pasture rotations, authorizing water hauling (after documenting NEPA compliance), closing allotments to grazing use, or allowing use in vacant allotments.

- Regulatory mechanisms to voluntarily implement grazing use changes include approval of applications for voluntary non-use (43 CFR 4130.2(g)), or approving applications for changes within the terms and conditions of permits and leases (43 CFR 4130.4(b)), or some combination.
- Line officers also have the option to implement needed changes through a formal agreement between the BLM and grazing operator (which is recommended to be implemented by decision) that specifies the drought-related grazing adjustments (43 CFR 4110.3-3(a)), or by temporarily suspending or otherwise modifying use via a decision that may be put into immediate effect, if necessary (43 CFR 4110.3-2(a) and 3-3(b)).[2]
- If using an agreement or decision, indicate within it the intended duration of the drought-related adjustments and include supporting rationale for the indicated timeframe.
- Regulation 43 CFR 4130.6-2 provides the mechanism for the BLM to authorize use in vacant allotments. Do not modify permits and leases (43 CFR 4130.3-3) to make drought responsive short-term grazing use adjustments.

Offices are required to screen any proposed drought mitigation strategies and actions to determine if they trigger the requirement for National Environmental Policy Act (NEPA) compliance documentation and if so, whether existing documentation is adequate or whether additional analysis is needed. Addressing drought management in Resource Management Plans or Allotment Management Plans, or preparing programmatic drought action plans, provides pro-active opportunities to address potential conditions and contingencies.

In those situations where agreement cannot be reached, authorized officers of the Bureau have the final responsibility and accountability for ensuring that public lands are not permanently damaged by improper use. If issuance of a decision concerning livestock use becomes necessary, the procedure specified in 43 CFR 4160 will be followed. It should be further understood that final decisions can be modified or rescinded, if the conditions that existed when the decision was issued no longer exist. If significant amounts of precipitation occur during the growing season, producing significant changes in the amount of moisture available to plants, this may cause decisions to be reconsidered. The consultation, cooperation, and coordination process will be used to obtain livestock operator and stakeholder involvement in such cases.

Procedures and Guidelines

The following guidelines and procedures are intended to provide the data, flexibility and direction for public land managers and livestock operators to develop strategies and make decisions during drought conditions. Consultation and coordination with livestock operators and other interested parties will be carried out during all procedural steps.

I. Winter Assessment (Late-October - February)

A. *Analysis*

1. Review the past season's monitoring results. Analyze plant growth, actual use, insect infestation occurrences, utilization, use pattern maps, residual cover, and especially the use of "rest" pastures. Review the past season's land health assessments in areas of concern.

2. Analyze precipitation records and distribution patterns from the National Weather Service, the [Montana Drought and Water Information website](#), the [North Dakota Drought website](#), the [South Dakota Drought website](#), local cooperators, BLM, and other agencies. Tabulate moisture departures from normal levels and timing of precipitation in relation to past years' growing season.

3. Determine whether currently available data is sufficient to inform and support drought responsive actions.

4. In identified priority or "I" allotments where there is concern because there is limited residual cover, effective precipitation well below normal, rest pastures already used, abnormally high utilization or use patterns, etc., field offices may opt to measure soil moisture in representative areas for additional data. Where available, use RAWS/OMNI sites, existing soil moisture stations, NRCS SCAN soil climate monitoring sites, etc. Additional soil moisture samples are to be taken at the rooting depth of major forage species in representative areas using techniques found in agency manuals/handbooks, the professional literature and extension publications.

B. Action

1. Where it is apparent resource degradation might occur if drought continues, begin to notify operators through letters and news releases that the coming year's livestock grazing could be affected.

2. Set up range user meetings in affected communities to discuss available information and possible actions to prevent range resource damage.

3. Encourage operators to make needed changes in their grazing schedules, including applying for non-use. If non-use is taken, but activated later should conditions change, BLM will waive the \$10 service fee in accordance with 43 CFR 4130.8.3. Authorized officers may issue refund or credit of grazing fees under 43 CFR 4130.8-2(b).

4. Meet with individual operators when available information indicates a particular allotment is affected by severe drought condition. Attempt to reach agreement on alternative grazing strategies if conditions do not change.

II. Late Winter and Spring Assessment (February - April)

A. Analysis

1. Review precipitation and soil moisture data for winter and early spring.

2. Review the effects of winter grazing use; snow pack influence for stock water, soil temperatures, etc-

3. Continue soil moisture measurements or monitoring where problems are apparent or in areas of concern. Measurements at rooting depth to measure available water for plants will be especially important during this period.

4. Assess availability of livestock water, in consultation with permittees.

5. Assess the availability of water for wildlife.

B. Action

1. If drought conditions are continuing, or becoming more severe, follow up winter letters and news releases with updates and attachments to grazing applications. Conduct meetings with Cooperative State Grazing Districts and Resource Advisory Councils. Meetings are encouraged with other concerned individuals and agencies as a part of the grazing management strategy.

2. Contact remaining operators who have not voluntarily made needed changes. Where you believe you have enough information to indicate an allotment is in severe drought condition, meet with the operator to review and explain the information you have and attempt to reach agreement on a grazing strategy. If an agreement cannot be reached and, especially if the allotment has a relatively early turnout date, issue a proposed decision. The extent of use adjustment contained in this decision (delayed turnout, reduction in numbers or duration, total exclusion, etc.) will depend on your assessment of all the factors involved. These include past grazing use, range condition, residual cover, precipitation, soil moisture and the land use objectives for the allotment.

3. If soil moisture is very dry and tending to blow away (Quick Assessment), or below the average soil moisture between field capacity and wilting point (Volumetric Measurement), delay turnout until key forage plants have grown to the 3-4 leaf stage (approximately one-half their normal height--for most of our native grass species about 6 inches). (Manske 2003, Manske 2011, Fraser 2003))

III. Continuing Assessment (throughout grazing season)

A. Analysis

1. Continue to closely monitor precipitation in "I" allotments and areas of concern. Attention is directed to determining effective (soil moisture) growing season precipitation.

2. Closely monitor utilization of key plant species and key areas. Remember to consider management objectives when selecting key species and areas.

3. Continue to monitor soil moisture in "I" allotments and areas of concern.

4. Monitor factors other than livestock grazing, such as insect infestations, congregations of wildlife, availability of livestock water, etc.

5. Monitor forage, habitat and water needs for wildlife. Consult with state wildlife agencies as needed.

B. Action

1. If soil moisture drops below the average soil moisture between field capacity and wilting point (Volumetric Measurement) and utilization has reached objective levels or a maximum of 30 percent utilization has occurred, livestock are to be removed.

2. If soil moisture remains unacceptable (completely dry and blows away (Quick Assessment)) or below wilting point soil moisture levels (Volumetric Measurement) during most of the spring and early summer with little or no growth in primary forage species for livestock (i.e., range readiness has not been reached), advise affected permittees that fall and winter ranges may not be available for use during the current year. Also advise that production in subsequent years may be affected if plant basal areas and density have been severely reduced.

3. For those permittees in "I", allotments with AMPs having available standing forage in rest pastures or fall or winter use pastures, advise the permittees that livestock must be removed from public lands when consumption of standing forage has reached objective levels or a maximum of 50 percent.

4. Adjust monitoring plans to collect data concerning residual cover, plant death, loss of basal area, density, and yield for analysis and use in later years.

5. Utilize interdisciplinary teams to ensure wildlife forage and water requirements are considered when determining adjustments.

IV. Other Considerations

1. The use of salt, mineral, and certain mineral supplements as necessary to overcome natural shortages of minerals in rangeland forage may be authorized as necessary to provide for proper range management(4130.3-2(c)).

2. Maintenance feeding on public lands is not authorized except under very unusual short-term conditions and by permit only. Maintenance feeding during drought conditions is specifically excluded.

3. Applications for a maintenance feeding permit due to poor forage conditions associated with drought should be denied and livestock removed or not allowed.

4. Review RMP guidance on wildlife habitat objectives.

V. Definitions:

Available water: That portion of water in a soil that plants can extract from the soil—generally measured per unit volume of soil; the amount of water in a soil between field capacity and permanent wilting point.

Basal area (range): The area of ground surface covered by the stem or stems of a range plant, usually measured 1 inch above the soil in contrast to the full spread of the foliage.

Density: (1) The number of individual plants per unit area; (2) Refers to the relative closeness of plants to one another.

Field Capacity: The maximum amount of water held in a soil, measured a few days after it has been thoroughly soaked and allowed to drain freely.

Flexibility: The ability to alter the grazing management plan to meet changing conditions.

Flushing: Feeding female animals a concentrated feed shortly before and during the breeding period for the purpose of stimulating ovulation.

Growing season: In temperate climates, that portion of the year when temperature and moisture are usually most favorable for plant growth.

Key species: (1) Forage species whose use serves as our indicator to the use of associated species; (2) Those species which must, because of their importance, be considered in the management program.

Maintenance feeding: Supplying feed to range animals when available forage is too limited to meet their minimum daily requirement (examples are cubes, pellets, baled or loose hay).

Permanent Wilting Point (PWP): The soil water content at which water is no longer available to plants, causing them to wilt because they cannot extract enough water to meet their requirements.

Phenology: The study of periodic biological phenomenon such as flowering, seeding, etc., especially as related to climate.

Range readiness: The defined stage of plant growth at which grazing may begin under a specific management plan without causing permanent damage to vegetation or soil.

Supplemental feed: A feed which supplements the forage available from the public lands and is provided to improve livestock nutrition and good animal husbandry and rangeland management practices. An example is salt or mineral block. Creep feeders to supplement feed for calves and supplemental feeding to "flush" cattle and sheep for breeding may be authorized on public lands when compatible with the resource management objectives.

VI. Soil Moisture Monitoring Methods Appendix

Quick Assessment

Soil moisture readings taken from 3 rooting depths of key forage species (e.g., 4-6 inches, 10-12 inches, 16 inches up to 3 feet) will indicate whether various key forage species have adequate moisture for growth. Squeeze the soil in your hand. Does it form a ball? If so, you probably have adequate soil moisture for growth. If it doesn't form a ball, but your hand feels cool, you probably have some soil moisture left. If the soil is completely dry and blows away, there is likely not enough moisture to sustain plant growth. (Howery 1999)

% Available water remaining	Coarse (Sand - Loamy Sand)	Light (Sandy Loam)	Medium (Loam, Silt Loam, Silty Clay Loam, Clay Loam, Sandy Clay Loam)	Heavy (Sandy Clay, Silty Clay, Clay)
0 (PWP or drier)	Dry, loose, single grained, flows through fingers	Dry, loose, flows through fingers	Powdery, dry, sometimes slightly crusted but easily breaks down into powdery condition	Hard, baked, cracked, sometimes has loose crumbs on surface
< 50	Still appears to be dry; will not form a ball with pressure	Still appears to be dry; will not form a ball	Somewhat crumbly but will hold together from pressure	Somewhat pliable, will ball under pressure
50-75	Still appears to be dry; will not form a ball with pressure	Tends to ball under pressure but seldom will hold together	Forms a ball, somewhat plastic, will sometimes slick slightly with pressure	Forms a ball, will ribbon out between thumb and forefinger

(Table adapted from Manitoba 2013)

Volumetric Measurement

The soil moisture content may be expressed by weight as the ratio of the mass of water present to the dry weight of the soil sample, or by volume as ratio of volume of water to the total volume of the soil sample. To determine any of these ratios for a particular soil sample, the water mass must be determined by drying the soil to constant weight and measuring the soil sample mass after and before drying. The water mass (or weight) is the difference between the weights of the wet and oven dry samples. The criterion for a dry soil sample is the soil sample that has been dried to constant weight in an oven at temperature between 100 – 110°C (105°C is typical). Normally drying is conducted on samples for at least 24 hours. A precision balance scale is needed (± 0.001 g.) Volumetric soil moisture can then be determined.

$$\text{Gravimetric soil moisture (W\%)} = \frac{\text{wt. (wet soil)} - \text{wt. (oven dry soil)}}{\text{wt. (oven dry soil)}} \times 100\%$$

$$\text{Volumetric soil moisture (\theta\%)} = \text{gravimetric soil moisture} \times \text{bulk density}$$

{Note: Bulk densities for specific soils can be obtained from the Web Soil Survey.}

Soil moisture measurements can then be compared with water content-15 bar and water content 1/3 bar data for a specific soil from the Web Soil Survey (<http://websoilsurvey.nrcs.usda.gov/app/>). Water content, 15 bar, is the amount of soil water retained at a tension of 15 bars, expressed as a volumetric percentage of the whole soil material. Water retained at 15 bars is significant in the determination of soil water-retention difference, which is used as the initial estimation of available water capacity for some soils. Water retained at 15 bars is an estimation of the wilting point. Water content, one-third bar, is the amount of soil water retained at a tension of 1/3 bar, expressed as a volumetric percentage of the whole soil. Water retained at 1/3 bar is significant in the determination of soil water-retention difference, which is used as the initial estimation of available water capacity for some soils. Water retained at 1/3 bar is the value commonly used to estimate the content of water at field capacity for most soils.

As soil moisture levels approach the wilting point of a soil, the less water available for plants. Plant growth becomes marginal and the plant is stressed. If the plant is further stressed by removal or damage to the top growth, it will begin to lose vigor, roots and thus its ability to grow. It is not unusual to reach this moisture level during late summer in much of Montana, Dakotas, and other semi-arid areas.

Other Soil Moisture Considerations

When monitoring soil moisture the following information should be kept in mind:

1. Soil moisture is measured at the depth of plant roots or to a root limiting layer. It will vary by plant(s) and soil type.
2. Soluble salts, gravel and heavy clay will decrease plant available water capacity.
3. Organic matter, good soil structure will increase plant available water capacity (The capacity increases about 1 percent for each 1 percent of organic matter).
4. Soils with water restricting layers like naturally compact subsoil, shallow bedrock or stratification can increase plant available water capacity of the overlying soil layers.
5. Soils that are deep, medium textured and uniform can have decreased plant available water but allow for deeper rooting.

VII. References

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